

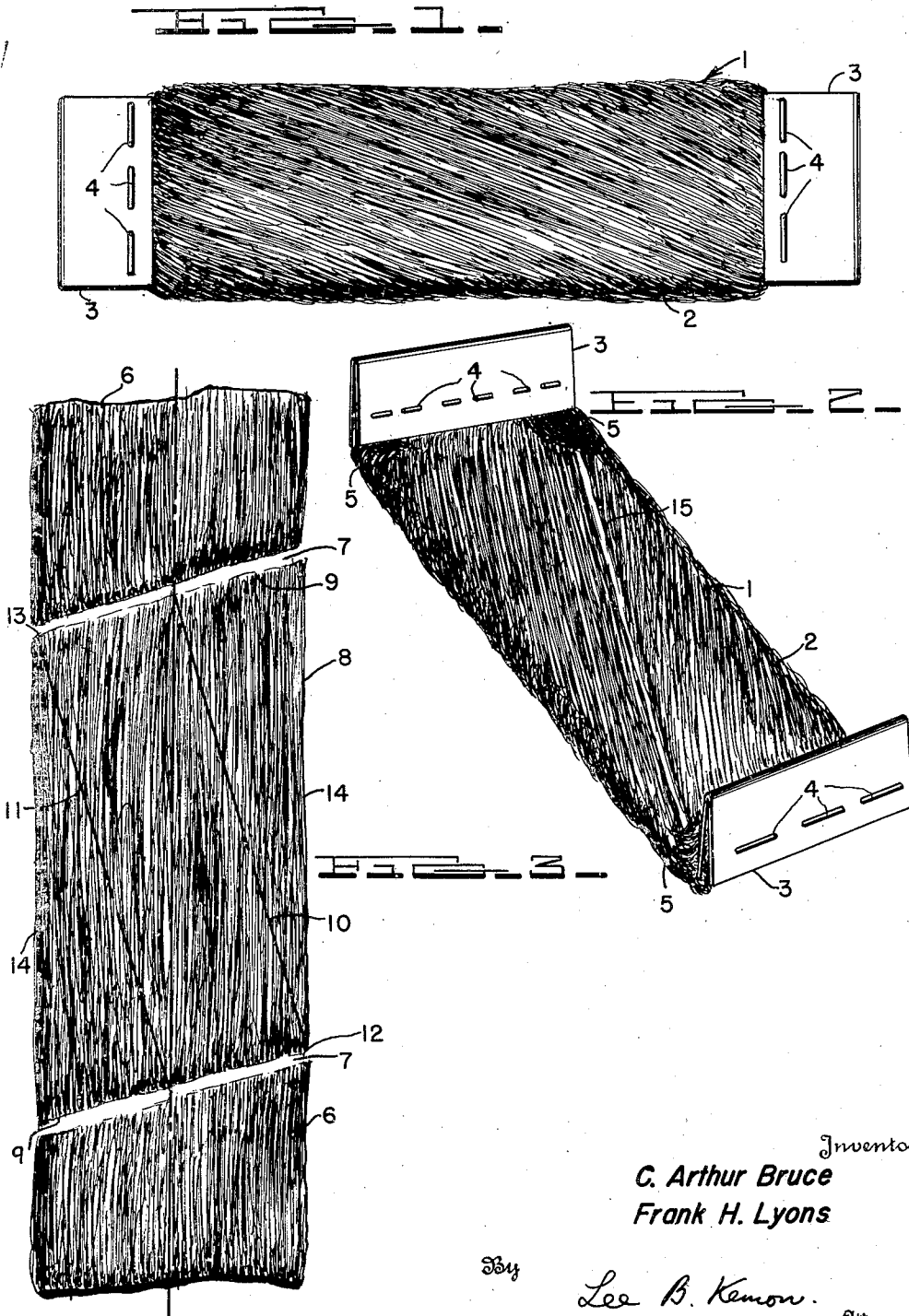
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METALLIC WOOL PAD

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## METALLIC WOOL PAD

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1

This invention relates to a floor cleaning device and more particularly to an improved metallic wool pad for use with a bristle brush or other backing element as a floor cleaning device, such as is disclosed in the application of Frank H. Lyons and Jacob F. Ferdon, filed April 10, 1947, Serial No. 740,550.

It is an object of this invention to provide a metallic wool pad which has improved cleaning action and longer life.

Another object of this invention is to provide a metallic wool pad that does not fray readily, particularly at the edges, and in which the wool filaments have an interlocking action with the bristles of the brush when used with such a backing element.

A further object of this invention is to provide a metallic wool pad having brush attaching means more firmly secured thereto and which are more readily and more securely attached to a backing element.

Still another object of this invention is to provide a simple method for rapidly making improved metallic wool pads.

Other objects and advantages of the invention will be disclosed in the following description and accompanying drawings in which:

Figure 1 is a plan view of a working surface of the improved pad.

Figure 2 is a perspective view of the improved pad ready for attachment to a bristle brush or other backing element.

Figure 3 is a diagrammatic view to illustrate the method of making the improved pad.

Referring now to Figures 1 and 2 there is shown a rectangular pad, generally indicated at 1, of metallic wool 2 having binding or attaching means secured to the ends thereof. The binding means may be tabs 3 of cardboard, as shown, or other sheet material of suitable characteristics which is folded over the ends of the metallic wool and secured thereto by staples, cement, sewing, or other suitable securing means. Staples 4, as shown, are preferred. Also thermo-plastic adhesives, such as synthetic resins which can be set by application of heat and pressure, may be used to consolidate the ends of the pads to provide the binding or attaching means.

The metallic wool 2 is preferably steel wool of No. 00 to No. 1 grade, or a mixture of several such grades. The wool 2 preferably has two or more layers therein, including a top and a bottom layer. The individual filaments or fibers of the wool in each layer are arranged generally in parallelism or, to state it in another manner, extend generally in the same direction. The wool filaments in each layer lie at an angle to the longitudinal centerline of the pad 1. The preferred angle is about 17°, as shown, but an angle between about 5° and 30° will provide the desired re-

2

sults, later described. It will be understood that the filaments of wool are, therefore at an angle to the direction of travel of the pad when in use. If this angle is too large, undue abrading and consequent marring of the surface finish of the floor results. A relatively small angle, however, not only improves the cleaning action of the pad without undue abrasion of the floor or its surface finish, but also improves the wearing life of the pad, as will be described.

The angle at which the wool filaments in the bottom layer lie with respect to the longitudinal centerline of the pad is opposite to that at which the filaments in the top layer lie. Thus, if the filaments in the bottom layer lie at an angle of 17° to the right, the strands in the top layer lie at the same angle to the left. The opposite filamentary angles between the two layers cause the filaments in one layer to cross the filaments in the other layer. Accordingly, when the pad 1 is engaged with a bristled brush as a backing element, the bristles will penetrate the layers of wool to some extent, and tend to interlock the filaments against fraying, in use.

The longitudinal edges of the pad 1 are protected further against undue fraying by constructing the pad, for example, from a flat section of metallic wool, and folding over both longitudinal edges thereof to provide the pad with two layers of wool. This folding process, to be described later, not only provides the top and bottom layers with opposite filamentary angles, but also provides the pad with longitudinal edges which have only a relatively few filament ends projecting therefrom. The longitudinal edge filaments are continuous between the top and bottom layers which eliminates the raw edges shown in the previously mentioned application and produces a neat folded edge, which has little tendency to fray.

A further improvement in the pad 1 is obtained by folding over the corners of the wool 2 before attaching the tabs 3, or otherwise consolidating the end filaments of the pad to form a binding or attaching means. This corner folding, indicated generally at 5, provides the pad with side edges which slightly taper near the ends so that no wool 2 projects laterally from between the walls of the tabs 3 to hinder easy attachment of the tabs to the brush or other backing element. The corner folds 5 also add somewhat to the bulk or thickness of the wool 2 at the ends of the pad, thus making the end portions more wedge-shaped for effective retention under the binding of the brush (as described in the above-mentioned application) or other means used to secure the pad to a backing element other than a brush.

Referring now to Figure 3, the pad is made as follows: A strip 6 of metallic wool, the filaments 60 of which are arranged generally longitudinally

3

and in parallelism, is cut or severed along spaced parallel lines, generally indicated as at 7, to form a section 8 of metallic wool having the shape of a parallelogram. The lines 7, along which the strip 6 is cut, lie at an angle of from 60° to 85° to the longitudinal centerline of the strip, so that the filaments of wool lie at the same angle to the severed edges 9 of the section 8. Preferably, this angle is about 73°. The severed section 8 of the strip 6 is so proportioned that lines 10 and 11, which are substantially normal to the severed edges 9 at approximately the midpoint thereof, pass through the corners 12 and 13 of the section. The opposite longitudinal edges 14 of the section 8 then are folded over along lines 10 and 11. The longitudinal edges 14, therefore, meet in diagonal abutting relationship along line 15 (see Figure 2), to form a generally rectangular pad 1 having a thickness equal to double that of the wool strip 6.

The pad 1, thus formed, may be passed, longitudinally, through concave rolls in order to flatten the longitudinal edges of the pad along the fold lines 10 and 11. This operation imparts a permanent set to the marginal filaments, which fixes the shape of the pad and provides neat longitudinal edges. The four corners of the pad 1 then are folded over, as indicated at 5, and the end portions are consolidated, for example, by tabs 4, stapled over the ends of the pad, to provide binding means.

In use, it is preferable to position the pad 1 with the abutting edges 14, i. e. line 15, in contact with the bristles of the brush or other backing element, so that the unbroken surface of the pad will be against the floor to be cleaned, in order to prevent any undue fraying of the working surface of the pad.

It will be apparent that other methods of making the pad can be employed. For example, a rectangular section could be cut from a strip of metallic wool of any width, so that the wool filaments of the section lie at the desired angle to two opposite sides thereof. Two opposite edges of the section then could be folded along lines parallel to the said opposite edges to meet in abutting relationship and produce a pad having at least some of the desirable features of the pad previously described. The preferred method, however, is that previously described, because of economy of operation and the small wastage of wool in the process.

Although a specific embodiment of the invention has been described, it will be realized that various changes in structure and method may be made without departing from the spirit of the invention. Therefore, the scope of the invention is as set forth in the following claims.

We claim:

1. An article of manufacture for use as a cleaning element comprising: a substantially flat pad of metallic wool, both sides of which are adapted to be applied to a surface to be cleaned, said pad having at least two ply-like completely contiguous wool layers of substantially equal thickness, the filaments of each layer being arranged substantially in parallelism and disposed in crossing relationship with the filaments of the other layer.

2. The structure set forth in claim 1 in which the pad has at least one substantially straight edge, the filaments of one layer being substan-

4

tially a continuation of the filaments of the other layer along said straight edge.

3. An article of manufacture adapted to be interengaged with a tufted undersurface of a backing member for use as a cleaning element comprising: a substantially flat pad of metallic wool having at least two ply-like contiguous wool layers of substantially equal thickness, the filaments of each layer being arranged substantially in parallelism and angularly disposed with respect to the lay of the filaments of the other layer, said pad having at least two substantially parallel edges lying at substantially equal angles of from 60° to 85° to the filaments of each of said layers, and means secured to said edges for detachably securing said pad to the undersurface of the backing member with either side in overlying interengagement with the ends of the tufts thereof.

4. The structure set forth in claim 3 in which the pad has two opposite edges other than the first-mentioned edges, the marginal filaments of said opposite edges being substantially continuous between said two layers.

5. An article of manufacture adapted to be interengaged with a tufted undersurface of an oblong backing member for use as a cleaning element comprising: a substantially flat oblong pad of metallic wool having at least two ply-like contiguous wool layers of substantially equal thickness, the filaments of each layer being arranged substantially in parallelism and angularly disposed with respect to the lay of the filaments of the other layer, the filaments of each layer lying at substantially equal angles of from 5° to 30° to the longitudinal centerline of said pad, and means secured to the ends of said pad for detachably securing said pad to the undersurface of the backing member with either side in overlying interengagement with the ends of the tufts thereof.

6. An article of manufacture for use as a cleaning element comprising: a substantially flat pad of metallic wool both sides of which are adapted to be applied to a surface to be cleaned, said pad having at least two ply-like completely contiguous wool layers of substantially equal thickness, the filaments of each layer being arranged generally in parallelism and extending in a direction different from the lay of the filaments of the other layer.

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FRANK H. LYONS.

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